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EXAMINER	
RILEY, MARCUS T	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/825,452	WU ET AL.	
	Examiner	Art Unit	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/15/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to applicant's remarks received on February 12, 2009. Claims 1-39 remain pending.

Response to Arguments

2. Applicant's arguments with respect to amended claims 1, 3 & 29 filed on February 12, 2009 have been fully considered but they are not persuasive.

A: Applicant's Remarks

For Applicant's Remarks, see *"Applicant Arguments/Remarks Made in an Amendment"* filed February 12, 2009.

A: Examiner's Response

Applicant argues that neither the Oyumi reference nor the Pass reference (nor any of the art of record) teach or suggest sending each of the images of the first class to a respective one of the printing units. Applicant further argues that there is no teaching or suggestion of classifying images into classes based on determined similarities.

Examiner understands that the applicant's arguments but respectfully disagree. Examiner also understands that sending each of the images of a class to one printing unit can allow for more consistent reproduction of images as explained in the specification. Oyumi '677 either alone or in combination with Pass and Enomoto '761 teaches discloses or suggest the applicant's claimed invention. For example, Oyumi at column 6, lines 40-43 discloses sending each of the images of the first class to a respective one of the printing units (See Figure 10 wherein Step S1109 sends

each of the images of a class to a printer. ***"Then, before distributing image data on an original image to be printed by the printer n to the printer n,*** *the host server 303 enlarges an image to be printed on the first side of the transfer sheet at a magnification of R/RnH1 in the main scanning direction and at a magnification of R/RnV1 in the sub-scanning direction, and enlarges an image to be printed on the second side of the transfer sheet at a magnification of R/RnH2 in the main scanning direction and at a magnification of R/RnV2 in the sub-scanning direction (step S1108)****. Then, the host server 303 distributes the enlarged image data to the respective printers,*** *and the printers form the images onto transfer sheets (step S1109)."*).

Pass at column, lines 45-52 discloses classifying images into classes based on determined similarities (*"Representing an image may further include calculating a posterized joint histogram. For example, the posterized joint histogram may be calculated after the weighting factor has been applied.* ***Information reflecting more than one feature of the image may be extracted from the image. Extracted features may include color, edge density, texturedness, gradient magnitude, and rank."***). Here, Pass discloses the similarities of the images and the different classes may include color, edge density, texturedness, gradient magnitude, and rank.

Accordingly, Oyumi '677 either alone or in combination with Pass and Enomoto '761 teaches, discloses or suggest the applicant's claimed invention. As such, claim 1 and its dependant claims are not allowable over the art of record. It is therefore respectfully submitted that independent claim 1 is not in condition for allowance as are claims 2-18 depending therefrom. Furthermore, claim 19 is a method that contains a similar feature as in claim 1 and as a result, claim 19 and claims 20-28 depending therefrom is not in condition for allowance. Finally, claim 29 is amended similarly to claim 1 such that it and its dependant claims 30-39 are also not in condition for allowance. Thus, Applicant's application is not in condition for allowance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 3, 13, 16-18, 19, 29 & 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyumi (US 7,301,677 B2 hereinafter, Oyumi '677) in combination with Pass et al (US 6,671,402 B1 hereinafter, Pass '402).

Regarding claim 1; Oyumi '677 discloses a printing control system, comprising (See printing controls system of Figure 1 wherein #'s 301 & 302 are the printing units and #303 is the host server.):

a plurality of printing units (See Figure 1 wherein #'s 301 & 302 are the printing units. See also Figure 10 wherein #S1105 is a print job by a plurality of printers);

an image source providing a print job comprising a plurality of images (See Figure 2 wherein #300 is the image forming apparatus. See Figure 6 wherein Fig. 6 shows and image source within Fig. 2. *"**FIG. 6 is a circuit block diagram showing the detailed construction of a mark image forming section included in the image controller 38** appearing in FIG. 2. **The mark image forming section is intended to print the four mark images 111a to 111d**..."* column 9, lines 33-36);

and a system processing unit, wherein the system processing unit is configured to receive the plurality of images in the print job from the image source (See Figure 1 wherein the host server 303 communicates with the printers 301 and 302 via the network 40, controls the operation of the printers 301 and 302, distributes images to the printers 301 and 302, and performs image processing);

calculate an image histogram for each image in the print job (*"The detection controller 620 **creates mark image density histogram data** based on the received digital signals 605 and 606 as described later. By referring to the data, the controller 39 recognizes mark images (for example, cross marks with predetermined widths), and if recognizing mark*

images, the controller 39 ***calculates the distance between the mark images 111a and 111b, the distance between the mark images 111c and 111d, and the distance between the mark images 111a and 111c, and the distance between the mark images 111b and 111d.****"* column 9, lines 22-31);

and send each of the images of the first class to a respective one of the printing units (See Figure 10 wherein Step S1109 sends each of the images of a class to a printer. *"****Then, before distributing image data on an original image to be printed by the printer n to the printer n,*** *the host server 303 enlarges an image to be printed on the first side of the transfer sheet at a magnification of R/RnH1 in the main scanning direction and at a magnification of R/RnV1 in the sub-scanning direction, and enlarges an image to be printed on the second side of the transfer sheet at a magnification of R/RnH2 in the main scanning direction and at a magnification of R/RnV2 in the sub-scanning direction (step S1108****). Then, the host server 303 distributes the enlarged image data to the respective printers,*** *and the printers form the images onto transfer sheets (step S1109)."* column 6, lines 40-43).

Oyumi '677 does not expressly disclose determining a similarity of the images in the print job by comparing the calculated histograms; classify the images into at least a first and a second class based on the similarity of the histograms.

Pass '402 discloses determining a similarity of the images in the print job by comparing the calculated histograms (*"The joint histogram for the image generally includes a weighted joint histogram, a posterized joint histogram, and any other combination of posterized, weighted and/or joint histograms.* ***The joint histogram of the image that was selected then is compared with the index of joint features (step 940). The joint features identified through the comparison may be related to images that include the same features as the selected image,*** *e.g., via the inverted index (step 950).* ***Indexed images that include the same features then are retrieved using similarity metrics to determine which of the matching images to display*** *and the order in which to display them (step 960)."* column 10, lines 14-25); (*"Representing an image may further include calculating a posterized joint histogram. For example, the posterized joint histogram may be calculated after the weighting factor has been applied."* column 1, lines 45-48);

classify the images into at least a first and a second class based on the similarity of the histograms (*"Representing an image may further include calculating a posterized joint histogram. For example, the posterized joint histogram may be calculated after the weighting factor has been applied. Information reflecting more than one*

feature of the image may be extracted from the image. ***Extracted features may include color, edge density, texturedness, gradient magnitude, and rank."*** column 1, lines 45-52).

Oyumi '677 and Pass '402 are combinable because they are from same field of endeavor of image representation (*"This invention relates to representing an image.."* Enomoto '761 at column 1, lines 6-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Pass '402 by adding determining a similarity of the images in the print job by comparing the calculated histograms; classify the images into at least a first and a second class based on the similarity of the histograms as taught by Pass '402. The motivation for doing so would have been because it is advantageous to eliminate the challenge of performing search and retrieval functions in an efficient, useful and timely manner (*"With the increased number of images, the abilities of conventional systems, methods, and computer programs to perform searching and retrieval functions in an efficient, useful, and timely manner have been challenged."* Pass '402 at column 1, lines 19-22). Therefore, it would have been obvious to combine Oyumi '677 with Pass '402 to obtain the invention as specified in claim 1.

Regarding claim 3; Oyumi '677 discloses wherein the plurality of printing units includes at least a first printing unit and a second printing unit, (See Figure 1 wherein #'s 301 & 302 are the printing units.)

wherein the number of classes equals the number of printing units and includes at least a first class and a second class (See Figure 10 wherein Step S1101 – S1103 wherein the number of classes equals the number of printing units and includes at least a first class and a second class. See also column 11, lines 63-67 thru column 12, lines 1-26).

and wherein the first class of images is printed on the first printing unit and the second class of images is printed on the second printing unit (See Figure 10 wherein Step S1109 sends each of the images of a class to a printer. ***"Then, before distributing image data on an original image to be printed by the printer n to the***

printer n, *the host server 303 enlarges an image to be printed on the first side of the transfer sheet at a magnification of R/RnH1 in the main scanning direction and at a magnification of R/RnV1 in the sub-scanning direction, and enlarges an image to be printed on the second side of the transfer sheet at a magnification of R/RnH2 in the main scanning direction and at a magnification of R/RnV2 in the sub-scanning direction (step S1108)****. Then, the host server 303 distributes the enlarged image data to the respective printers,*** *and the printers form the images onto transfer sheets (step S1109)."* column 6, lines 40-43).

Regarding claim 13; Oyumi '677 discloses wherein the number of core classes is equal to the number of printing units in the system (See Figure 10 wherein Step S1101 – S1103 wherein the number of classes equals the number of printing units.See also column 11, lines 63-67 thru column 12, lines 1-26).

Regarding claim 16; Oyumi '677 discloses wherein the printing units are each individual printers operatively coupled to the system processing unit (See Figure 1 wherein the host server 303 communicates with the printers 301 and 302 via the network 40, controls the operation of the printers 301 and 302, distributes images to the printers 301 and 302, and performs image processing *"The host server 303 communicates with the printers 301 and 302 via the network 40, controls the operation of the printers 301 and 302, distributes images to the printers 301 and 302, and performs image processing."* column 6, lines 40-43).

Regarding claim 17; Oyumi '677 discloses wherein the printing units are each print engines contained in a single printer (See Figure 2 wherein Fig. 2 shows the construction of one of the printers 301 and 302 where each has a print motor that is representative of an engine. *"It is assumed that the other printer is substantially identical in construction and function with the illustrated printer.* ***The image forming apparatus 300 is provided with a photosensitive drum*** *(hereinafter referred to as "the photosensitive body") 1 as an image carrier.* ***The photosensitive body 1 is rotated in the direction of an arrow A by a motor, not shown****."* column 6, lines 48-54).

Regarding claim 18; Oyumi '677 discloses wherein the printing units are each printheads contained in a single printer (See Figure 2 wherein Fig. 2 shows the construction of one of the printers 301 and 302 with developing units that is representative of a printhead. ***"The developing unit 13 is comprised of four developing devices 13Y, 13M, 13C, and 13K, which are intended for full-color development.*** *The developing devices 13Y, 13M, 13C, and 13K develop latent images on the photosensitive body 1 using yellow (Y), magenta (M), cyan (C), and black (K) toners, respectively. To develop images using toners of the respective colors, the developing unit 13 is rotated in the direction of an*

arrow R by a motor, not shown, to be positioned such that the developing devices corresponding to the respective colors can be sequentially abutted on the photosensitive body 1." column 6, lines 57-67).

Regarding claim 19; Oyumi '677 discloses a method of processing a print job including multiple images with a printing system including multiple printing units, comprising (*"It is therefore an object of the present invention to provide an image forming system, an image distribution apparatus,* ***and an image forming method that are capable of making uniform in size printed images, which should originally be the same in size, between transfer sheets on which the images have been printed by a plurality of printers*** *having different functions and capabilities when enough time has elapsed after fixing..."* column 2, lines 17-24);

identifying the number of printing units in the system, the system including at least a first printing unit and a second printing unit (*"FIG. 1 is a block diagram showing the arrangement of an image forming system according to a first embodiment of the present invention. In FIG. 1,* ***reference numerals 301 and 302 each denote a printer; 40, a network; and 303, a host server that controls the operation of the printers 301 and 302.****"* column 6, lines 30-34);

calculating a histogram for each image in the print job (*"The detection controller 620* ***creates mark image density histogram data*** *based on the received digital signals 605 and 606 as described later. By referring to the data, the controller 39 recognizes mark images (for example, cross marks with predetermined widths), and if recognizing mark images, the controller 39* ***calculates the distance between the mark images 111a and 111b, the distance between the mark images 111c and 111d, and the distance between the mark images 111a and 111c, and the distance between the mark images 111b and 111d.****"* column 9, lines 22-31);

and sending the images to the printing units for printing, including sending the images from the first class to the first printing unit and sending the images from the second class to the second printing unit (See Figure 10 wherein Step S1109 sends each of the images of a class to a printer. *"****Then, before distributing image data on an original image to be printed by the printer n to the printer n,*** *the host server 303 enlarges an image to be printed on the first side of the transfer sheet at a magnification of R/RnH1 in the main scanning direction and at a magnification of R/RnV1 in the sub-scanning direction, and enlarges an image to be printed on the second side of the transfer sheet at a magnification of R/RnH2 in the main scanning direction and at a magnification of R/RnV2 in the sub-scanning direction (step S1108)****). Then, the host server 303 distributes the enlarged image data to the respective printers,*** *and the printers*

form the images onto transfer sheets (step S1109)." column 6, lines 40-43). See also (*"The host server 303 communicates with the printers 301 and 302 via the network 40, controls the operation of the printers 301 and 302,* ***distributes images to the printers 301 and 302, and performs image processing****."* column 6, lines 40-43).

Oyumi '677 does not expressly disclose comparing the histograms of the images in the print job to determine similarity between the images; grouping the images into groups based on the similarity of the comparisons of the histograms; sorting the images in the groups into classes, including at least a first class and a second class.

Pass '402 discloses comparing the histograms of the images in the print job to determine similarity between the images (*"The joint histogram for the image generally includes a weighted joint histogram, a posterized joint histogram, and any other combination of posterized, weighted and/or joint histograms. The joint histogram of the image that was selected then is compared with the index of joint features (step 940). The joint features identified through the comparison may be related to images that include the same features as the selected image, e.g., via the inverted index (step 950). Indexed images that include the same features then are retrieved using similarity metrics to determine which of the matching images to display and the order in which to display them (step 960)."* column 10, lines 14-25); See also (*"Representing an image may further include calculating a posterized joint histogram. For example, the posterized joint histogram may be calculated after the weighting factor has been applied."* column 1, lines 45-48);

grouping the images into groups based on the similarity of the comparisons of the histograms and sorting the images in the groups into classes, including at least a first class and a second class (*"Representing an image may further include calculating a posterized joint histogram. For example, the posterized joint histogram may be calculated after the weighting factor has been applied. Information reflecting more than one feature of the image may be extracted from the image.* ***Extracted features may include color, edge density, texturedness, gradient magnitude, and rank."*** column 1, lines 45-52).

Oyumi '677 and Pass '402 are combinable because they are from same field of endeavor of image representation (*"This invention relates to representing an image."* Pass '402 at column 1, line 10).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Pass '402 by adding comparing the histograms of the images in the print job to determine similarity between the images; grouping the images into groups based on the similarity of the comparisons of the histograms; sorting the images in the groups into classes, including at least a first class and a second class as taught by Pass '402. The motivation for doing so would have been because it is advantageous to eliminate the challenge of performing search and retrieval functions in an efficient, useful and timely manner (*"With the increased number of images, the abilities of conventional systems, methods, and computer programs to perform searching and retrieval functions in an efficient, useful, and timely manner have been challenged."* Pass '402 at column 1, lines 19-22). Therefore, it would have been obvious to combine Oyumi '677 with Pass '402 to obtain the invention as specified in claim 19.

Regarding claim 29; Independent claims 29 contains substantially similar features as that of claim 1. Thus, claim 29 is rejected on the same ground as claim 1.

Regarding claim 31; Dependent claims 31 contains substantially similar features as that of apparatus claim 3. Thus, claim 31 is rejected on the same ground as claim 3.

5. **Claims 2, 14, 15, 20, 28, 30 & 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyumi '677 and Pass '402 as applied to claim 1 above, and further in view of Enomoto (US 7,304,761 hereinafter, Enomoto '761).

Regarding claim 2; Oyumi '677 as modified does not expressly disclose wherein the system processing unit is adapted to compare the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms.

Enomoto '761 discloses wherein the system processing unit is adapted to compare the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms (*"More specifically, in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Oyumi '677 and Enomoto '761 are combinable because they are from same field of endeavor of printer systems (*"The present invention relates to a technical field of a print system for outputting a print (photograph) on which an image photographed on a film [or an image photographed by a digital camera] is reproduced, and in particular, to a data retrieval method allowing an image on a print made on the occasion of film processing and that on a reprint to suitably match each other in such a print system."* Enomoto '761 at column 1, lines 6-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein the system processing unit is adapted to compare the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms as taught by Enomoto '761. The motivation for doing so would have been because it is advantageous to provide a data retrieval method to enable the retrieval of image processing-related data suitable for producing a reprint which meets the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image (*"...the present invention has an object of providing a data retrieval method enabling the retrieval of image processing-related data suitable for producing a reprint meeting the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image."* Enomoto '761 at column 3, lines 19-25). Therefore, it would have been obvious to combine Oyumi '677 with Enomoto '761 to obtain the invention as specified in claim 1.

Regarding claim 14; Enomoto '761 discloses wherein the system processing unit is adapted to classify the images based on the comparison of the calculated histograms by also forming final classes from the core classes by adding any remaining image members of the sets to the core classes with which the sets are most similar (*"More specifically, in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Regarding claim 15; Enomoto '761 discloses wherein the system processing unit is adapted to determine which sets are most similar to which of the core classes by a progressive process wherein the number of image members in a core class increases each time a set is merged into one of the core classes (*"More specifically, in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Regarding claim 20; Oyumi '677 as modified does not expressly disclose wherein comparing the histograms of the images includes calculating cross-correlation values between the images in the print job based on the histograms.

Enomoto '761 discloses wherein comparing the histograms of the images includes calculating cross-correlation values between the images in the print job based on the histograms

(*"More specifically, in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Oyumi '677 and Enomoto '761 are combinable because they are from same field of endeavor of printer systems (*"The present invention relates to a technical field of a print system for outputting a print (photograph) on which an image photographed on a film [or an image photographed by a digital camera] is reproduced, and in particular, to a data retrieval method allowing an image on a print made on the occasion of film processing and that on a reprint to suitably match each other in such a print system."* Enomoto '761 at column 1, lines 6-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein comparing the histograms of the images includes calculating cross-correlation values between the images in the print job based on the histograms as taught by Enomoto '761. The motivation for doing so would have been because it is advantageous to provide a data retrieval method to enable the retrieval of image processing-related data suitable for producing a reprint which meets the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image (*"...the present invention has an object of providing a data retrieval method enabling the retrieval of image processing-related data suitable for producing a reprint meeting the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image."* Enomoto '761 at column 3, lines 19-25).

Therefore, it would have been obvious to combine Oyumi '677 with Enomoto '761 to obtain the invention as specified in claim 19.

Regarding claim 28; Enomoto '761 discloses wherein sorting the images in the groups into classes further includes forming the classes from the core classes by adding any remaining image members of the sets to the core classes with which the sets are most similar (*"More specifically, in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Regarding claim 30; Oyumi '677 as modified does not expressly disclose wherein the processing means compares the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms.

Enomoto '761 discloses wherein the processing means compares the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms (*"More specifically,* ***in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity*** *such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

Oyumi '677 and Enomoto '761 are combinable 761 because they are from same field of endeavor of printer systems (*"The present invention relates to a technical field of a print system for outputting a print (photograph) on which an image photographed on a film [or an image photographed by a digital camera] is reproduced, and in particular, to a data retrieval method allowing an image on a print made on the occasion of film processing and that on a reprint to suitably match each other in such a print system."* Enomoto '761 at column 1, lines 6-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein the processing means compares the calculated histograms by calculating cross-correlation values between the images in the print job based on the histograms as taught by Enomoto '761. The motivation for doing so would have been because it is advantageous to provide a data retrieval method to enable the retrieval of image processing-related data suitable for producing a reprint which meets the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image (*"...the present invention has an object of providing a data retrieval method enabling the retrieval of image processing-related data suitable for producing a reprint meeting the requests of a customer even in the case where data (image processing-related data) related to a plurality of image processing operations are registered in a database for the same image."* Enomoto '761 at column 3, lines 19-25). Therefore, it would have been obvious to combine Oyumi '677 with Enomoto '761 to obtain the invention as specified in claim 29.

Regarding claim 39; Enomoto '761 discloses wherein the processing means classifies the images based on the comparison of the calculated histograms by also forming final classes from the core classes by adding any remaining image members of the sets to the core classes with which the sets are most similar (*"More specifically,* ***in the printing with film processing, from the prescan data, the setup subsection 70 produces a density histogram, calculates an image characteristic quantity*** *such as a predetermined percentage point of frequency of a density histogram for a mean density, a highlight (minimum density) or a shadow (maximum density), LATD (Large Area Transmission Density), a maximum value density and a minimum value density of the histogram or the like so as to set the reading conditions for fine scan."* column 10, lines 63-67 thru column 11, lines 1-5).

6. **Claims 4-8, 12, 21-23, 27, 32-34 & 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyumi '677 and Pass '402 as applied to claim 1 above, and further in view of Neubauer et al. (US 7,110,591 hereinafter, Neubauer '591).

Regarding claim 4; Oyumi '677 as modified does not expressly disclose wherein the cross-correlation values between the images in the print job are normalized and have a value of one of 0, 1, and between 0 and 1, wherein the value is 0 when the images are most dissimilar and is 1 when the images are most similar.

Neubauer '591 discloses wherein the cross-correlation values between the images in the print job are normalized and have a value of one of 0, 1, and between 0 and 1, wherein the value is 0 when the images are most dissimilar and is 1 when the images are most similar (*"Next, for each template image, a normalized correlation is computed with respect to the target image (step 67). In particular, a normalized correlation is computed with respect to brightness and contrast as follows: ρ=Σ I(i)* T(i), where ρ denotes the correlation coefficient, I denotes the target image, T denotes the template, and where ρε[-1,1] (where 1 indicates perfect correlation and -1 indicates anti -correlation)."* column 6, lines 15-29).

Oyumi '677 and Neubauer '591 are combinable because they are from same field of endeavor of printer systems (*"The present invention is generally related to a system and method for detecting markers on a PCB (printed circuit board) and, in particular, to a system and method for detecting markers on a PCB using an image processing technique based on histogram and template features.."* Neubauer '591 at column 1, lines 8-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein the cross-correlation values between the images in the print job are normalized and have a value of one of 0, 1, and between 0 and 1, wherein the value is 0 when the images are most dissimilar and is 1 when the images are most similar as taught by Neubauer '591. The motivation for doing so would have been because it is advantageous to provide increased recognition results (*"Preferably, at*

least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91).” Neubauer ‘591 at column 7, lines 31-34). Therefore, it would have been obvious to combine Oyumi ‘677 with Neubauer ‘591 to obtain the invention as specified in claim 1.

Regarding claim 5; Neubauer ‘591 discloses wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins (*“Next, for each template image, a normalized correlation is computed with respect to the target image (step 67). In particular, a normalized correlation is computed with respect to brightness and contrast as follows: ρ=Σ I(i)* T(i), where ρ denotes the correlation coefficient, I denotes the target image, T denotes the template, and where ρε[-1,1] (where 1 indicates perfect correlation and -1 indicates anti -correlation).”* column 6, lines 15-29).

Regarding claim 6; Neubauer ‘591 discloses wherein the system processing unit is adapted to classify the images based on the comparison of the calculated histograms by forming a group for each of the images in the print job, and then adding other images to the group as image members of the group when the cross-correlation value between respective images is greater than a threshold value (*“Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below, the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having* ***a maximum correlation coefficient above a predetermined threshold.****”* column 5, lines 18-29).

Regarding claim 7; Neubauer ‘591 discloses wherein the threshold value is between approximately 0.8 and approximately 0.95 (*“In another embodiment of the classification process (step 68), the*

user can choose between an "automatic" threshold determination and "manual" threshold determination. ***The manual threshold selection is preferably used when there are no available templates from both classes. Namely, if there are only "good" templates, then the user can select a threshold, which is slightly lower (.about.10%) than the correlation coefficients within the "good" class.*** *However, since this selection is rather arbitrary, it is preferred to gather samples from both classes and to use the automatic threshold selection."* column 6, lines 52-62).

Regarding claim 8; Neubauer '591 discloses wherein the system processing unit is adapted to classify the images based on the comparison of the calculated histograms by also forming subgroups from the groups by regrouping groups that have image members in common (*"Referring now to FIG. 9, a flow diagram illustrates a method for recognizing markers according to one aspect of the present invention using histogram-based marker recognition. Initially, prior to recognition, a training process is performed to train the marker recognition system (step 90). Training involves building one or more histograms for each pattern, wherein each histogram preferably comprises a gray value resolution of 32 (5 bits).* ***Preferably, at least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91).*** *"* column 7, lines 23-34).

Regarding claim 12; Neubauer '591 discloses wherein the system processing unit is adapted to classify the images based on the comparison of the calculated histograms by also forming core classes from the sets by selecting the sets with the greatest number of image members as the core classes (*"Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below,* ***the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having a maximum correlation coefficient above a predetermined threshold.*** *"* column 5, lines 18-29).

Regarding claim 21; Oyumi '677 as modified does not expressly disclose wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins.

Neubauer '591 discloses wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins (*"Next, for each template image, a normalized correlation is computed with respect to the target image (step 67). In particular, a normalized correlation is computed with respect to brightness and contrast as follows: ρ=Σ I(i)* T(i), where ρ denotes the correlation coefficient, I denotes the target image, T denotes the template, and where ρε[-1,1] (where 1 indicates perfect correlation and -1 indicates anti -correlation)."* column 6, lines 15-29).

Oyumi '677 and Neubauer '591 are combinable because they are from same field of endeavor of printer systems (*"The present invention is generally related to a system and method for detecting markers on a PCB (printed circuit board) and, in particular, to a system and method for detecting markers on a PCB using an image processing technique based on histogram and template features.."* Neubauer '591 at column 1, lines 8-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins as taught by Neubauer '591. The motivation for doing so would have been because it is advantageous to provide increased recognition results (*"Preferably, at least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91)."*

Neubauer '591 at column 7, lines 31-34). Therefore, it would have been obvious to combine Oyumi '677 with Neubauer '591 to obtain the invention as specified in claim 19.

Regarding claim 22; Neubauer '591 discloses wherein grouping the images into groups includes forming a group for each of the images in the print job, and then adding other images to the group as image members of the group when the cross-correlation value between respective images is greater than a threshold value (*"Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below, the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having a maximum correlation coefficient above a predetermined threshold."* column 5, lines 18-29).

Regarding claim 23; Neubauer '591 discloses wherein sorting the images in the groups into classes includes forming subgroups from the groups by merging groups that have image members in common (*"Referring now to FIG. 9, a flow diagram illustrates a method for recognizing markers according to one aspect of the present invention using histogram-based marker recognition. Initially, prior to recognition, a training process is performed to train the marker recognition system (step 90). Training involves building one or more histograms for each pattern, wherein each histogram preferably comprises a gray value resolution of 32 (5 bits). Preferably, at least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91)."* column 7, lines 23-34).

Regarding claim 27; Neubauer '591 discloses wherein sorting the images in the groups into classes further includes forming core classes from the sets by selecting the sets with the

greatest number of image members as the core classes (*"Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below, the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having a maximum correlation coefficient above a predetermined threshold."* column 5, lines 18-29).

Regarding claim 32; Oyumi '677 does not expressly disclose wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins.

Neubauer '591 discloses wherein the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins (*"Next, for each template image, a normalized correlation is computed with respect to the target image (step 67). In particular, a normalized correlation is computed with respect to brightness and contrast as follows: $\rho=\Sigma\ I(i)*\ T(i)$, where ρ denotes the correlation coefficient, I denotes the target image, T denotes the template, and where $\rho\varepsilon[-1,1]$ (where 1 indicates perfect correlation and -1 indicates anti -correlation)."* column 6, lines 15-29).

Oyumi '677 and Neubauer '591 are combinable because they are from same field of endeavor of printer systems (*"The present invention is generally related to a system and method for detecting markers on a PCB (printed circuit board) and, in particular, to a system and method for detecting markers on a PCB using an image processing technique based on histogram and template features.."* Neubauer '591 at column 1, lines 8-12).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 and Pass '402 by adding wherein

the histogram for each image includes a multitude of bins each representing colors, and wherein calculating the cross-correlation values includes calculating a normalized summation of the product of each color bin for the multitude of bins as taught by Neubauer '591. The motivation for doing so would have been because it is advantageous to provide increased recognition results (*"Preferably, at least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91)."* Neubauer '591 at column 7, lines 31-34). Therefore, it would have been obvious to combine Oyumi '677 and Pass '402 with Neubauer '591 to obtain the invention as specified in claim 29.

Regarding claim 33; Neubauer '591 discloses wherein the processing means classifies the images based on the comparison of the calculated histograms by forming a group for each of the images in the print job, and then adding other images to the group as image members of the group when the cross-correlation value between respective images is greater than a threshold value (*"Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below, the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having a maximum correlation coefficient above a predetermined threshold."* column 5, lines 18-29).

Regarding claim 34; Neubauer '591 discloses wherein the processing means classifies the images based on the comparison of the calculated histograms by also forming subgroups from the groups by regrouping groups that have image members in common (*"Referring now to FIG. 9, a flow diagram illustrates a method for recognizing markers according to one aspect of the present invention using histogram-*

based marker recognition. Initially, prior to recognition, a training process is performed to train the marker recognition system (step 90). Training involves building one or more histograms for each pattern, wherein each histogram preferably comprises a gray value resolution of 32 (5 bits). Preferably, at least one training image is generated for a "good" histogram class and a "bad" histogram class, although multiple histograms in each class would provide increased recognition results. The histograms are stored and indexed in a database (step 91).” column 7, lines 23-34).

Regarding claim 38; Neubauer ‘591 discloses wherein the processing means classifies the images based on the comparison of the calculated histograms by also forming core classes from the sets by selecting the sets with the greatest number of image members as the core classes (*“Next, the requisite template(s) are retrieved from memory (step 63) depending on the implementation. For example, if a "cross" marker is being detected, the image processing system would retrieve the trained templates corresponding to such marker. In one embodiment (referred to herein as a "manual" process), the user specifies which class of templates (good or bad) to utilize for the recognition process. In this embodiment, as explained below, the target image is compared to each of the templates in the selected template class and the recognition results are determined based on the template having a maximum correlation coefficient above a predetermined threshold.”* column 5, lines 18-29).

7. **Claims 9-11, 24-26 & 35-37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyumi ‘677, Pass ‘402 & Neubauer ‘591 as applied to claim 1 above, and further in view of Sterns (US 6,714,677 hereinafter, Sterns ‘677).

Regarding claim 9; Oyumi ‘677as modified does not expressly disclose wherein the system processing unit is adapted to merge groups that have at least half of the image members in common into subgroups.

Sterns ‘677 discloses wherein the system processing unit is adapted to merge groups that have at least half of the image members in common into subgroups (*“Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that*

location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences." column 1, lines 66-67 thru column 2, lines 1-10).

Oyumi '677 and Sterns '677 are combinable because they are from same field of endeavor of printer systems (*"For example, in FIG. 1 there are shown histograms of the correlation differences from three images taken of the same printed glyph patch."* Sterns '677 at column 3, lines 2-4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677by adding wherein the system processing unit is adapted to merge groups that have at least half of the image members in common into subgroups as taught by Sterns '677. The motivation for doing so would have been because it is advantageous to improve the selection of a threshold so as to maximize correct categorization (*"The present invention is directed toward improving the selection of a threshold so as to maximize correct categorization while minimizing the number of glyphs erroneously decoded."* Sterns '677 at column 5, lines 1-2). Therefore, it would have been obvious to combine Oyumi '677 with Sterns '677 to obtain the invention as specified in claim 1.

Regarding claim 10; Sterns '677 discloses wherein the system processing unit is adapted to regroup image members from groups having less than half of the image members in common into subgroups by computing an average cross-correlation value of each image member of the groups with each group to determine the group to which the image member belongs (*"More specifically, the step of assigning preferably includes performing cross-correlations for each location with first and second correlation kernels representing the first and second states of the glyphs. In this case the step of decoding preferably includes*

establishing a threshold value for the minimum determined difference indicative of unambiguous decoding of a glyph state." column 2, lines 10-16).

Regarding claim 11; Sterns '677 discloses wherein the system processing unit is adapted to classify the images based on the comparison of the calculated histograms by also forming sets from the subgroups by merging subgroups that have similar image members (*"Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences."* column 1, lines 66-67 thru column 2, lines 1-10).

Regarding claim 24; Oyumi '677 as modified does not expressly disclose wherein forming subgroups from the groups includes merging into respective subgroups groups that have at least half of the image members in common.

Sterns '677 discloses wherein forming subgroups from the groups includes merging into respective subgroups groups that have at least half of the image members in common (*"Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences."* column 1, lines 66-67 thru column 2, lines 1-10).

Oyumi '677 and Sterns '677 are combinable because they are from same field of endeavor of printer systems (*"For example, in FIG. 1 there are shown histograms of the correlation differences from three images taken of the same printed glyph patch."* Sterns '677 at column 3, lines 2-4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein forming subgroups from the groups includes merging into respective subgroups groups that have at least half of the image members in common as taught by Sterns '677. The motivation for doing so would have been because it is advantageous to improve the selection of a threshold so as to maximize correct categorization (*"The present invention is directed toward improving the selection of a threshold so as to maximize correct categorization while minimizing the number of glyphs erroneously decoded."* Sterns '677 at column 5, lines 1-2). Therefore, it would have been obvious to combine Oyumi '677 with Sterns '677 to obtain the invention as specified in claim 19.

Regarding claim 25; Sterns '677 discloses wherein forming subgroups from the groups includes sorting into respective subgroups image members from groups that have less than half of the image members in common by computing an average cross-correlation value of each image member of the groups with each group to determine the group to which the image member belongs (*"More specifically, the step of assigning preferably includes performing cross-correlations for each location with first and second correlation kernels representing the first and second states of the glyphs. In this case the step of decoding preferably includes establishing a threshold value for the minimum determined difference indicative of unambiguous decoding of a glyph state."* column 2, lines 10-16).

Regarding claim 26; Sterns '677 discloses wherein sorting the images in the groups into classes further includes forming sets from the subgroups by merging subgroups that have similar

image members (*"Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences."* column 1, lines 66-67 thru column 2, lines 1-10).

Regarding claim 35; Oyumi '677 as modified does not expressly disclose wherein the processing means merges groups that have at least half of the image members in common into subgroups.

Sterns '677 discloses wherein the processing means merges groups that have at least half of the image members in common into subgroups (*"Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences."* column 1, lines 66-67 thru column 2, lines 1-10).

Oyumi '677 and Sterns '677 are combinable because they are from same field of endeavor of printer systems (*"For example, in FIG. 1 there are shown histograms of the correlation differences from three images taken of the same printed glyph patch."* Sterns '677 at column 3, lines 2-4).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the printer system as taught by Oyumi '677 by adding wherein the processing means merges groups that have at least half of the image members in common into subgroups as taught by Sterns '677. The motivation for doing so would have been because it is advantageous to improve the selection of a threshold so as to maximize correct categorization (*"The present*

invention is directed toward improving the selection of a threshold so as to maximize correct categorization while minimizing the number of glyphs erroneously decoded." Sterns '677 at column 5, lines 1-2). Therefore, it would have been obvious to combine Oyumi '677 with Sterns '677 to obtain the invention as specified in claim 19.

Regarding claim 36; Sterns '677 discloses wherein the processing means regroups image members from groups having less than half of the image members in common into subgroups by computing an average cross-correlation value of each image member of the groups with each group to determine the group to which the image member belongs (*"More specifically, the step of assigning preferably includes performing cross-correlations for each location with first and second correlation kernels representing the first and second states of the glyphs. In this case the step of decoding preferably includes establishing a threshold value for the minimum determined difference indicative of unambiguous decoding of a glyph state."* column 2, lines 10-16).

Regarding claim 37; Sterns '677 discloses wherein the processing means classifies the images based on the comparison of the calculated histograms by also forming sets from the subgroups by merging subgroups that have similar image members (*"Consistent with the principles of the present invention, a method of decoding a plurality of glyphs is provided comprising the steps of: capturing an image of a group of glyphs to form image data for each glyph location; assigning for each location a first value indicative of the likelihood that location contains a glyph in a first state; assigning for each location a second value indicative of the likelihood that location contains a glyph in a second state; determining the difference between the first and second values for each potential glyph location; and decoding the plurality of glyphs based at least in part upon a distribution analysis of the determined differences."* column 1, lines 66-67 thru column 2, lines 1-10).

Examiner Notes

7. The Examiner cites particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are

representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully considers the references in its entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or as disclosed by the Examiner.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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